

Translation

## PATENT COOPERATION TREATY



## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 55238 Mü/tp	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/EP2003/008441	International filing date (day/month/year) 30 July 2003 (30.07.2003)	Priority date (day/month/year) 30 September 2002 (30.09.2002)
International Patent Classification (IPC) or national classification and IPC G02B 6/42		
Applicant LITEF GMBH		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☒ (sent to the applicant and to the International Bureau) a total of 1 sheets, as follows:

☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒ Box No. I Basis of the report

☐ Box No. II Priority

☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

☐ Box No. IV Lack of unity of invention

☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐ Box No. VI Certain documents cited

☐ Box No. VII Certain defects in the international application

☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 22 January 2004 (22.01.2004)	Date of completion of this report 07 December 2004 (07.12.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ The international application as originally filed/furnished
- ☒ the description:
- pages \_\_\_\_\_ 1-3 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages \_\_\_\_\_ 2 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ 1 \_\_\_\_\_ received by this Authority on 17 November 2004 (17.11.2004)
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- pages \_\_\_\_\_ 1/1 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1, 2	YES
	Claims		NO
Inventive step (IS)	Claims	1, 2	YES
	Claims		NO
Industrial applicability (IA)	Claims	1, 2	YES
	Claims		NO

### 2. Citations and explanations

Reference is made to the following documents:

- D1: PATENT ABSTRACTS OF JAPAN, Vol. 1997, No. 09,  
30 September 1997 (1997-09-30) & JP 09 127424 A  
(YOKOGAWA ELECTRIC CORP), 16 May 1997 (1997-05-16)
- D2: US 2001/012047 A1 (OSAWA YASUHIRO ET AL.) 9 August  
2001 (2001-08-09)
- D3: US-A-5 369 661 (YAMAGUCHI SATOSHI ET AL.)  
29 November 1994 (1994-11-29)

D1 is considered to be the prior art closest to the subject matter of claim 1. Said document discloses (the references in parentheses relate to D1):

a spectrally broadband (the LEDs 1<sub>1</sub> to 1<sub>5</sub> emit spectrally broadband light; abstract, line 8: "The exit light of the optical fiber is made white") light source (Title: "LIGHT SOURCE") of high light output for fibre-optic ("optical fiber 7") applications characterised by

- a linear array of adjacent LEDs (the LEDs 1<sub>1</sub> to 1<sub>5</sub>)
- a lens array ("lenses 5<sub>1</sub> to 5<sub>5</sub>") arranged at a

specified distance in front of the LED linear array on the radiation side and having optical functions individually assigned to the LED elements so that, in order to optimise (abstract, line 1: "To improve light utilization efficiency") the light output that can be coupled into an optical fibre (7), the radiation of the individual LED elements is concentrated onto a lens unit ("lens 6") arranged upstream of the coupling point of the fibre (abstract, lines 5 to 8: "The divergent beams from respective LEDs 1<sub>1</sub> to 1<sub>5</sub> are paralleled to the parallel beams by lenses 5<sub>1</sub> to 5<sub>5</sub> and are in succession condensed by a lens 6 to one point (one spot). This light spot is made incident on the end face of an optical fiber 7 arranged in this condensing position.").

The subject matter of claim 1 therefore differs from that known from D1 especially in that:

the linear array forms a monolithic unit and the individual elements of the microlens array (4) are arranged or designed in such a way that the light beams emitted through the elements to the lens unit have different angles of inclination with respect to the longitudinal axis of the fibre.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

The problem addressed by the present invention can therefore be considered that of simplifying the lens unit (5).

The solution to this problem as proposed in claim 1 of the present application involves an inventive step (PCT

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Article 33(3)) for the following reasons:

The available prior art does not indicate that the lens unit (5) arranged upstream of the coupling point of the fibre can be of a smaller design if the light beams emitted to the lens unit have different angles of inclination with respect to the longitudinal axis of the fibre.

Claim 2 is dependent on claim 1 and therefore likewise satisfies the PCT novelty and inventive step requirements.